

**WHAT IS CLAIMED IS:**

1. An apparatus useful in the removal of toxic material from a toxic weapon projectile having a casing, a burster well, a base and an ogive, the apparatus comprising:

- a) a base;
- b) a projectile retaining container disposed on the base for accepting and retaining the ogive of a toxic weapon projectile, the projectile retaining container having a projectile retainer opening, a ram opening and a drain opening;
- c) a ram disposed on the base and extending upwards through the ram opening into the projectile retaining container, the ram including a ram head having one or more spray nozzles, the ram being extendible and retractable between (1) a retracted ram position wherein the ram is disposed proximate to the ram opening, and (2) an extended ram position wherein the ram is disposed distal to the ram opening;
- d) a projectile retainer opening seal for sealing the ogive of a toxic weapon projectile within the projectile retaining opening; and
- e) a ram opening seal for sealing the ram within the ram opening.

2. The apparatus of claim 1 further comprising a rotator for rotating a toxic weapon projectile retained within the projectile retaining container.

3. The apparatus of claim 1 further comprising a projectile base end retainer member.

4. The apparatus of claim 3 wherein the projectile base end retainer member is moveable between (1) a first retainer member position wherein the retainer member is directly above the projectile retaining container and (2) a second retainer member position wherein the retainer member is not disposed directly above the projectile retaining container.

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5. The apparatus of claim 1 wherein the projectile retaining container has a projectile retaining container upper portion and a projectile retaining container lower portion, and wherein the projectile retainer opening is defined in the projectile retaining container upper portion and the ram opening and the drain opening are defined in the projectile retaining container lower portion.

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6. The apparatus of claim 1 wherein the projectile retainer opening seal comprises a fluorocarbon polymer liner disposed within the projectile retaining container.

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7. The apparatus of claim 1 wherein the ram is capable of delivering at least about 100 tons of force across the ram head.

8. The apparatus of claim 1 wherein the one or more spray nozzles are capable of accepting washing fluid at pressures in excess of 5,000 psig.

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9. The apparatus of claim 1 wherein the ogive of the projectile defines a round central ogive opening having a diameter, wherein the ram has a circular cross-section with a diameter, and wherein the difference between the diameter of the central ogive opening and the diameter of the ram is less than about 0.1 inch.

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10. An apparatus useful in the removal of toxic material from a toxic weapon projectile having a casing, a burster well, a base and an ogive, the apparatus comprising:

- a) a base;

- 5                   b)     a projectile retaining container having an upper portion and a lower portion, the projectile retaining container being disposed on the base for accepting and retaining the ogive of a toxic weapon projectile, the projectile retaining container defining a projectile retainer opening in the upper portion of the projectile retaining container, a ram opening in the lower portion of the projectile retaining container and a drain opening in the lower portion of the projectile retaining container;
- 10                  c)     a ram disposed on the base and extending upwards through the ram opening into the projectile retaining container, the ram including a ram head having one or more spray nozzles, the ram being extendible and retractable between (1) a retracted ram position wherein the ram is disposed proximate to the ram opening, and (2) an extended ram position wherein the ram is disposed distal to the ram opening;
- 15                  d)     a projectile retainer opening seal for sealing the ogive of a toxic weapon projectile within the projectile retaining opening;
- e)     a ram opening seal for sealing the ram within the ram opening;
- f)     a rotator for rotating a toxic weapon projectile retained within the projectile retaining container; and
- 20                  g)     a projectile base end retaining member, the projectile base end retaining member being moveable between (1) a first retainer member position wherein the retainer member is directly above the projectile retaining container and (2) a second retainer member position wherein the retainer member is not disposed directly above the projectile retaining container.

25                  11.     The apparatus of claim 10 wherein the projectile retainer opening seal comprises a fluorocarbon polymer liner disposed within the projectile retaining container.

12. The apparatus of claim 10 wherein the ogive of the projectile defines a round central ogive opening having a diameter, wherein the ram has a circular cross-section with a diameter, and wherein the difference between the diameter of the central ogive opening and the diameter of the ram is less than about 0.1 inch.

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13. A method for removing toxic material from a toxic weapon projectile having a casing, toxic material within a toxic agent cavity, a burster well, a base and an ogive, the method comprising the steps of:

(a) providing an apparatus having:

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i) a base;

ii) a projectile retaining container disposed on the base for accepting and retaining the ogive of a toxic weapon projectile, the projectile retaining container having a projectile retainer opening, a ram opening and a drain opening

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iii) a ram disposed on the base and extending upwards through the ram opening into the projectile retaining container, the ram including a ram head having one or more spray nozzles, the ram being extendible and retractable between (1) a retracted ram position wherein the ram is disposed proximate to the ram opening, and (2) an extended ram position wherein the ram is disposed distal to the ram opening;

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iv) a projectile retainer opening seal for sealing the ogive of a toxic weapon projectile within the projectile retaining opening; and

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v) a ram opening seal for sealing the ram within the ram opening;

- (b) rigidly retaining a projectile in the apparatus with the ogive of the projectile downwardly disposed into the projectile opening in the projectile retaining container;
- (c) sealing the ogive of the projectile to the projectile retaining container with the projectile retainer opening seal;
- (d) extending the ram from the retracted ram position towards the extended ram position whereby the ram crushes the burster well and releases the toxic material from the toxic agent cavity;
- (e) pressurizing a washing fluid through the one or more spray nozzles to flush toxic material from the projectile, whereby washing fluid and toxic material gravitates out of the projectile and into the projectile retaining container; and
- (f) removing washing fluid and toxic material from the projectile receiving container via the drain opening.

14. The method of claim 13 wherein the apparatus comprises a rotator for rotating a toxic weapon projectile retained within the projectile retaining container, and wherein the method further comprises the step of rotating the projectile during the flushing of toxic materials from the projectile in step (e).

15. The method of claim 14 wherein, prior to rotating the projectile in step (e), the ram is retracted towards the retracted ram position by a distance between about one quarter inch and about one inch.

16. The method of claim 13 wherein the projectile base end retainer member is moveable between (1) a first retainer member position wherein the retainer member is directly above the projectile retaining container and (2) a second retainer member position wherein the retainer member is not disposed directly above the projectile retaining container, and wherein

the method comprises the further steps of moving the projectile end member to the second retainer member position prior to retaining the projectile in the apparatus in step (b), and, after the projectile is retained within the apparatus, moving the projectile base end retainer member to the first retainer member position, whereby the projectile base end retainer member rigidly  
5 retains the projectile in the apparatus.

17. The method of claim 13 wherein the projectile retainer opening seal comprises a fluorocarbon polymer liner disposed within the projectile retaining container.

10 18. The method of claim 13 wherein the ram is capable of delivering at least about 100 tons of force across the ram head.

15 19. The method of claim 13 wherein the one or more spray nozzles is capable of accepting washing fluid at pressures in excess of 5,000 psig, and wherein the step of flushing toxic materials from the projectile uses a washing fluid pressurized to in excess of 5,000 psig.

20 20. The method of claim 13 wherein the ogive of the projectile defines a round central ogive opening having a diameter, wherein the ram has a circular cross-section with a diameter, and wherein the difference between the diameter of the central ogive opening and the diameter of the ram is less than about 0.1 inch.